

REMARKS / ARGUMENTS

Status of Claims

Claims 1-21 are pending in the application. Claims 1-19 and 21 stand rejected. Applicants have amended Claims 1 and 6 and added Claim 22, leaving Claims 1-22 for consideration upon entry of the present Amendment.

Claim 20 is neither rejected nor objected to. Applicants understand Claim 20 to be allowable. If this understanding is not accurate, the Examiner is invited to contact Applicants for further discussion.

Applicants respectfully submit that the rejections under 35 U.S.C. §112, second paragraph and 35 U.S.C. §103(a), have been traversed, that no new matter has been entered, and that the application is in condition for allowance.

Information Disclosure Statement

It is respectfully stated that a concise explanation of the relevance of Foreign Patent Document FR 91 15308 is instantly required for deciding the patentability of the claimed subject matter of Applicants' invention. Applicants' respectfully disagree and submit that the requirement of a concise explanation was addressed in a SUPPLEMENTAL AMENDMENT UNDER 37 C.F.R. 1.111 submitted on December 6, 2005 to the USPTO.

Appended hereto as EXHIBIT A is a copy of Applicants' SUPPLEMENTAL AMENDMENT submitted December 6, 2005. In the present Office Action, only Applicants' amendment filed December 3, 2005 is noted. (See, Page 2 of the Office Action.) Perhaps, the SUPPLEMENTAL AMENDMENT was inadvertently overlooked and therefore not considered in the issuance of the present Office Action.

Therefore, Applicants' respectfully submit that the issue of a concise explanation of the relevance of Foreign Patent Document FR 91 15308 has been sufficiently addressed. Entry and formal consideration of the cited references are respectfully requested.

Rejections Under 35 U.S.C. §112, Second Paragraph

Claims 1-16 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicants regards as the invention.

It is respectfully contended that in Claim 1, “matching a generated target window of chosen dimensional characteristics and containing the selected target region of interest around pixels of the selected target” and in Claim 7, “matching a generated target window of chosen dimensional characteristics and containing the target region of interest around the selected target pixels” are vague and indefinite. Particularly, the Examiner comments that it is not clear to which region the generated target window will be matched. (See, Item 12 of the Office Action.)

Additionally, the Examiner respectfully comments in Item 8 of the Office Action that Claim 1 merely recites the definition of correlation which is well known in the art and that no details have been provided regarding the specific correlation process of Applicants’ invention.

In response, Applicants’ herein amend Claims 1 and 7 to better clarify and set forth the invention. Support for the amendments is at least found at page 13, line 5 through page 14, line 3 of the specification.

In view of the foregoing, Applicants respectfully submit that the claimed subject matter is described in such a manner that reasonably conveys to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Accordingly, Applicants respectfully requests the Examiner to reconsider and withdraw this rejection, which Applicants considers to be traversed.

Rejections Under 35 U.S.C. §103(a)

Regarding Claims 1, 6, 7 and 15

Claims 1, 6, 7 and 15 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Robb et al. (U.S. Patent No. 5,568,384, hereinafter “Robb”) in view of Mick et al. (U.S. Patent No. 5,261,404, hereinafter “Mick”). Applicants respectfully disagree.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing that all elements of the invention are disclosed in the prior art and that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).

Firstly, to support the rejection of Claims 1 and 7, it is broadly contended in the Office Action, without further explanation, that Robb discloses a method for “providing a set of images having at least first and second digitized stereotaxic images having positions of homologous regions of interest corresponding to the element of interest and appearing in the set of stereotaxic images” as claimed. (See, Page 4, Item 14 of the Office Action.) However, Applicants respectfully contend that the rejection details in the Office Action mischaracterize the teachings of Robb with regard to claimed invention and do not provide the teaching or explanation as to how the disclosure of Robb is equivalent to Applicants’ claims.

Robb discloses synthesizing three dimensional image sets into a single composite image and extracting surfaces (represented as contours with common features) from the two different images to be matching. (Abstract.) Robb is silent as to disclosing the images “having positions of homologous regions of interest corresponding to the element of interest” as recited in amended Claims 1 and 7. Mick also does not teach this limitation.

Secondly, Robb merely discloses selecting and naming two images, one image being named “base image” and the other being named “match image.” (Col. 3, lines 56-59.) Robb is silent as to the selection any *region of interest* in the images. Here, the *images* are merely selected. Thus, Robb does not disclose “selecting in a first stereotaxic image a first target region of interest having a target pixel” as recited in amended Claims 1 and 7. Mick also does not teach this limitation.

Thirdly, Robb discloses extracting contours by using *well known image segmentation algorithms*, stacking the contours of the images to form base surfaces then obtaining a smoothly varying surface of the contours. (Col. 3, lines 55 through Col. 4, line 10.) The contours of Robb are not equivalent to the “target region of interest” or “second region of interest” of the claimed invention. Extracting contours, stacking them and smoothing out the surface also is not equivalent to the “matching” of the claimed invention. Thus, Robb does not disclose “matching the first target region of interest with a second region of interest homologous to the first target region of interest and appearing in the second stereotaxic image” as recited in amended Claims 1 and 7. Mick also does not teach this limitation.

Fourthly, in the same citation (Col. 3, lines 55 through Col. 4, line 10) discussed above, Robb is silent as to disclosing anything remotely resembling a window. As noted above, Robb does not disclose “selecting the target region of interest” as claimed. Thus, Robb does not disclose “generating a target window of chosen dimensional characteristics and containing the selected first target region of interest around pixels of the selected target pixel” as recited in amended Claims 1 and 7. Mick also does not teach this limitation.

Fifthly, in the same citation Col. 3, lines 55 through Col. 4, line 10) discussed above, Robb discloses selecting *a limited number of points*, but does not disclose what these points refer to. The “points” disclosed in Robb are not equivalent to the “pixels” of the claimed invention. Robb is silent as to disclosing selecting the points based on any criteria or anything remotely resembling a window. Thus, Robb does not disclose “selecting a set of pixels in the second stereotaxic image according to a predetermined

selection criterion so as to generate a second window around each selected pixel, the second window having the same dimensional characteristics as the generated target window” as recited in amended Claims 1 and 7. Mick also does not teach this limitation.

Sixthly, it is broadly submitted in the Office Action that “Robb’s teachings regarding the image registration generally disclose the correlation between images.” (See, Page 6 of Office Action.) Applicants respectfully disagree and submit that the Examiner has not met the burden required for a §103 rejection and has not shown with specificity where in Robb the claimed elements of “processing a correlation” and “using the correlation values to identify the region of interest” of Claim 1 are arranged.

Seventhly, to support the rejection of Claim 7, it is broadly stated that “as per Claim 7, it recites generally the same limitation as Claim 1 above and analogous remarks apply. Claim 7 is a broader version of Claim 1 and therefore rejectable for the same reasons.” (See, Page 7 of the Office Action.) Applicants respectfully disagree and further submit that the Examiner has not met the burden required for a §103 rejection. Claim 7 has specific limitations not recited in Claim 1. The Office Action does not detail with any specificity where in Robb the claimed elements of these specific limitations of Claim 7 are arranged.

Particularly, Robb is silent as to at least disclosing limitations, as recited in amended Claim 7:

“...determining and storing a first set of numerical values, respectively representing predetermined characteristics of any region of interest for the target region of interest on the basis of the grey-scale values of the pixels in the target window;...

generating a second window, containing a corresponding candidate region of interest around each of the selected pixels;

determining and storing a second set of numerical values, respectively representing the predetermined characteristics for each candidate region of interest, on the basis of the grey-scale values of the pixels in the associated second window; and

identifying the region of interest homologous to the target region of interest on the basis of a comparison processing between the first set of numerical values and each second set of numerical values so as to minimize the risk of matching error between the homologous regions of interest.”

Mick also does not teach these limitations of amended Claim 7.

As discussed above, Robb and Mick, alone or in combination, do not *disclose all of the limitations* of amended Claims 1 and 7. Thus, *prima facie* obviousness does not exist regarding amended Claims 1 and 7 with respect to the Robb and Mick patents.

Additionally, since Robb and Mick fail to disclose all of the limitations of amended Claims 1 and 7, clearly, one of ordinary skill at the time of Applicants' invention would not have a *motivation to modify or combine the references*, nor a reasonable likelihood of success in forming the claimed invention by modifying or combining the references. Thus, here again, *prima facie* obviousness does not exist. *Id.*

Thus, the requirements of *prime facie* obviousness are not met with respect to amended Claims 1 and 7 with regard to the Robb and Mick patents. Claims 1 and 7 are not further rejected or objected to, and Applicants respectfully submit that these claims are allowable. Claims 6 and 15 depend from Claims 1 and 7, respectively. As discussed above, Claims 1 and 7 are allowable. Therefore, Claims 6 and 15 are correspondingly allowable as depending upon allowable Claims 1 and 7. Reconsideration and allowance of the claims is respectfully requested.

Regarding Claims 2-5 and 8-14

Claims 2 and 3 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Robb and Mick as applied to Claim 1 above, in further view of Gerstenberger (U.S. Patent No. 5,220,441, hereinafter "Gerstenberger").

Claim 4 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Robb and Mick as applied to Claim 1 above, in further view of Russ, *The Image Processing Handbook*, 2nd Edition, CRC Press, 1994.

Claim 5 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Robb and Mick as applied to Claim 1 above, in further view of Pratt, *Digital Image Processing*, Second Edition, Wiley & Sons, 1991.

Claims 8-14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Robb and Mick as applied to Claims 1 and 7 above, in further view of Kenet et al. (U.S. Patent No. 5,836,872, hereinafter "Kenet").

Claims 2-5 and 8-14 variously depend from Claims 1 and 7, respectively. As discussed above, amended Claims 1 and 7 are allowable. Therefore, Claims 2-5 and 8-14 are correspondingly allowable as depending upon allowable Claims 1 and 7. Reconsideration and allowance of the claims is respectfully requested.

Regarding Claims 16-19 and 21

Claims 16-19 and 21 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Robb. Applicants respectfully disagree.

Firstly, as discussed above, Robb is silent as to disclosing the images “having positions of *homologous regions* of interest corresponding to the *element of interest*,” therefore Robb necessarily does not disclose “providing a set of digitized stereotaxic images having positions of homologous regions of interest corresponding to the element of interest and appearing in the set of stereotaxic images” as recited in Claim 16.

Secondly, as discussed above, Robb is silent as to selection any *region of interest* in the images. In Robb, the *images* are merely selected. Thus, Robb does not disclose “selecting in a first stereotaxic image a first target region of interest” as recited in Claim 16.

Thirdly, as discussed above, the contours of Robb are not equivalent to the “target region of interest” or “second region of interest” of the claimed invention. Thus, Robb does not disclose “selecting in a second stereotaxic image on the basis of a first automatic matching at least one second region of interest which may be homologous to the first target region” as recited in Claim 16.

Fourthly, it is respectfully stated that Robb does not specifically teach “determining the position, in a third stereotaxic image, of a projected pixel corresponding to the projection into the third stereotaxic image of the candidate pixel” as claimed. (See, Page 10 of the Office Action.) However, it is respectfully contended that Robb allegedly “indicates that Robb’s method is a sequential method” and “if the process of Robb were sequential, then the following step (not disclosed by Robb) would also be taught as the automatic matching.” Applicants respectfully submit that these statements are

contradictory and not sufficient for meeting the burden of establishing that *all elements of the invention are disclosed in the prior art* as required for an obviousness rejection to be proper.

It is further respectfully “predicted” in the details for the rejection of Claim 17, what Robb *would use* and how Robb *would proceed* to the determination of an optimal minimized cost function, as recited in Claim 16. That is, the Examiner has not shown with specificity where in Robb the *claimed elements are disclosed*. Furthermore, “predicting” what Robb *would use* (but does not disclose) is not sufficient as a *suggestion or incentive that would have motivated the skilled artisan to modify Robb to teach the claimed invention*.

As discussed above, Robb, at least does not disclose the limitations of Claim 16 discussed above. Thus, *prima facie* obviousness does not exist regarding Claim 16 with respect to the Robb patent.

Additionally, there exists no *suggestion* or incentive to modify Robb. Thus, here again, *prima facie* obviousness does not exist. *Id.*

Thus, the requirements of *prime facie* obviousness are not met by the Examiner’s 35 U.S.C. 103(a) rejection of Claim 16. Accordingly, reconsideration and withdrawal of the outstanding rejection of Claim 16 is respectfully requested. Claim 16 is not further rejected or objected to, and Applicants respectfully submit that this claim is allowable. Claims 17-19 variously depend from Claim 16. As discussed above, Claim 16 is allowable. Therefore, Claims 17-19 and 21 are correspondingly allowable as depending upon allowable Claim 16. Reconsideration and withdrawal of the relevant rejection is respectfully requested. Reconsideration and withdrawal of the relevant rejection is respectfully requested.

In light of the forgoing, Applicants respectfully submits that the Examiner’s rejections under 35 U.S.C. §112, second paragraph and 35 U.S.C. §103(a), have been traversed, and respectfully requests that the Examiner reconsider and withdraw these rejections.

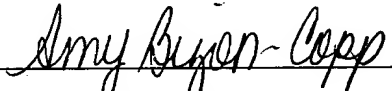
The Commissioner is hereby authorized to charge any additional fees that may be required for this amendment, or credit any overpayment, to Deposit Account No. 50-2513.

In the event that an extension of time is required, or may be required in addition to that requested in a petition for extension of time, the Commissioner is requested to grant a petition for that extension of time that is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to the above identified Deposit Account.

Respectfully submitted,

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